U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE

CHANGE

NV 56XE.1B

10-10-96

Subject: UNDERGROUND NUCLEAR TESTING

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1. EXPLANATION OF CHANGE. This Order was revised to reflect organizational changes and the project management concept.

2. FILING INSTRUCTIONS.

   a. Please file the attached following NV Order 56XE.1B in your DOE and NV Directives Manual.

   b. Remove NV Order 56XE.1A, of 12-29-95, which has been canceled by this Order.

U.S. DEPARTMENT OF ENERGY

NEVADA OPERATIONS OFFICE

ORDER

NV 56XE.1B

10-10-96

Subject: UNDERGROUND NUCLEAR TESTING

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1. PURPOSE. Provide policy and direction and establish authorities and responsibilities for the U.S. Department of Energy (DOE) underground nuclear testing program and the national requirement to maintain the capability to resume testing at the Nevada Test Site (NTS). During the testing moratorium, appropriate sections of this Order will be exercised consistent with the test readiness program.

2. CANCELLATION. NV Order 56XE.1A, UNDERGROUND NUCLEAR TESTING, of 12-29-95.

3. SCOPE. The provisions of this Order apply to all organizational elements of the DOE Nevada Operations Office (DOE/NV), DOE/NV contractors and subcontractors, associated agencies, and NTS users.

4. EXEMPTIONS. None.

5. REFERENCES. Refer to Chapter VII.

6. DEFINITIONS. Refer to Chapter VIII.

7. POLICY. Underground nuclear testing operations will be carried out, if directed by the President, under the authority of the Atomic Energy Act of 1954, as amended; DOE Reorganization Act, Public Law 95-91, of 8-4-77; the Energy Reorganization Act of 1974; the Limited Test Ban Treaty, the Threshold Test Ban Treaty, the Peaceful Nuclear Explosions Treaty, and other international agreements; the current Environmental Impact Statement describing nuclear weapons testing at the NTS; and additional guidance as provided by the Assistant Secretary for Defense Programs (DP-1). These operations will be conducted subject to programmatic and detonation approvals provided by the Deputy Assistant Secretary for Research and Development (DP-10), DOE Headquarters (DOE/HQ).

8. OBJECTIVES.

INITIATED BY:
Stockpile Stewardship Division

a. Tests are conducted in a manner that protects the health and safety of on-site workers and the general public.

b. Tests are conducted in a manner that precludes an unauthorized, accidental, or inadvertent detonation of a nuclear explosive.

c. Tests are conducted in compliance with all applicable environmental laws and regulations.

d. Scientific data necessary for a safe and reliable nuclear weapons stockpile are collected.

e. Operations and tests are conducted within available funding provided by DOE.

f. Tests are conducted in accordance with provisions of the Limited Test Ban Treaty, the Threshold Test Ban Treaty, the Peaceful Nuclear Explosions Treaty, and all other applicable treaties and international agreements.

g. Test information is documented and archived as a historical record.

9. RESPONSIBILITIES AND AUTHORITIES.

a. DOE/NV Manager is responsible for the safe conduct of the underground nuclear testing program. The DOE/NV Manager:

(1) Charters and appoints members to the following panels:

(a) Containment Evaluation Panel.

(b) Threshold Treaty Review Panel.

(c) Verification Evaluation Panel.

(d) Any other review panel or special study group deemed appropriate.

(2) Appoints DOE Test Controllers and provides guidance and direction to them.

(3) Approves nominated individuals to serve as members of the Test Controller's Scientific Advisory Panel and Laboratory Test Directors.

(4) Appoints the DOE/NV Chairperson for the Nuclear Explosive Safety Study or Survey for the nuclear test, and requires certification of members appointed by other Operations Office Managers to serve on the DOE/NV study or survey group.

(5) Certifies all DOE/NV and DOE/HQ Personnel Assurance Program participants, and accepts certification by other Operations Office Managers.

(6) Presides over the Test Management Information Team during test execution.

(7) Reviews and forwards Nuclear Explosive Safety Studies for approval to the Deputy Assistant Secretary for Military Application and Stockpile Management (DP-20).

(8) Approves the Nuclear Explosive Safety Studies Survey and Nuclear Explosive Assembly As-Built Reviews.

(9) Certifies to DP-20 that assembled nuclear explosives are in conformance with the approved Nuclear Explosive Safety Studies.

(10) Requests detonation authority from DP-10.

(11) Approves the public information release policy related to each nuclear test.

(12) Serves as the Energy Senior Official in the event of a major radiological release.

(13) Delegates authorities and operational responsibilities to the Directors of Los Alamos National Laboratory (LANL), Lawrence Livermore National Laboratory (LLNL), and the Test Directors, as necessary, to conduct the underground nuclear test program.

(14) Approves and forwards the Nuclear Testing Emergency Management Hazard Assessment(s), or updates and/or revisions, containing Emergency Planning Zones, to the Assistant Secretary for Defense Programs, the Assistant Secretary for Environment, Safety, and Health, and the Director of Emergency Management.

b. Assistant Manager for Business and Financial Services.

(1) Provides contract administration for all contracts and interagency agreements relative to essential support services required for the testing program such as geology, meteorology, and radiological safety.

(2) Gathers, reviews, and analyzes data from participating organizations, as necessary, to prepare an annual report for historical documentation of testing at the NTS.

c. Assistant Manager for Technical Services.

(1) Provides all necessary engineering, environment, safety, health protection, asset management, and security support.

(2) Assigns the Health Physics Advisor to the Test Controller's Scientific Advisory Panel.

(3) Reviews and submits the Intruder Interdiction Action Plan to the Assistant Manager for National Security.

d. Assistant Manager for National Security (AMNS).

(1) Serves as the principle line manager responsible for underground nuclear testing ensuring that all activities necessary for the safe conduct of a test are met.

(2) Provides the Manager with scientific and management advice and assistance in the development and execution of policies, programs, and projects in support of nuclear testing and the readiness to resume testing.

(3) Authorizes the receipt, storage, assembly, disassembly, movement, emplacement, and stemming of nuclear explosives on the NTS.

(4) Identifies key positions for the safe preparation and conduct of nuclear testing.

e. Director, Public Affairs and Information Office (PAIO). Provides Public Affairs Specialists to the Nuclear Test Organization and the Test Management Information Team.

f. Director, Safeguards and Security Division (SSD).

(1) Assigns a Security Advisor to the Nuclear Test Organization.

(2) Administers the Nuclear Materials Management Program.

(3) Provides an intruder interdiction plan and oversees activities.

g. Director, Safety and Health Division.

(1) Provides an Occupational Safety Advisor to the Nuclear Test Organization.

(2) Provides a Radiological Operations Officer to the Nuclear Test Organization.

(3) Provides a Radiological Safety Advisor to the Test Management Information Team.

h. Director, Environmental Protection Division (EPD).

(1) Reviews and provides documentation for each nuclear test for conformance with applicable environmental laws and regulations.

(2) Administers the Interagency Agreement with the U.S. Environmental Protection Agency (EPA)/Office of Radiation and Indoor Air (ORIA)-Radiation Sciences Laboratory (RSL), Las Vegas, providing all necessary resources for off-site emergency preparedness and response prior to detonation.

i. Director, Stockpile Stewardship Division (STD).

(1) Provides a Project Manager for each test to ensure that all non-operational activities necessary for the safe conduct of a test are met.

(2) Provides a Test Management Information Team Manager during test execution periods.

(3) Provides a Test Operations Officer, Test Liaison Officer, a Test Readiness Project Manager, and an Air Operations Officer to the Nuclear Test Organization.

(4) Prepares a Detonation Authority Request package for each nuclear test and submits it to the DOE/NV Manager for further submission to DP-10.

(5) Prepares authorization to move, emplace, and stem, and submits it to the AMNS and advises the Test Controller.

(6) Provides technical and administrative support to the Containment Evaluation Panel. Ensures conclusions and recommendations of the Containment Evaluation Panel are recorded and included in the Detonation Authority Request package.

(7) Provides technical guidance and direction under the Interagency Agreement with the U.S. Geological Survey (USGS) to ensure that the geological and hydrological information pertinent to containment is made available to appropriate DOE organizations, laboratories, and the Containment Evaluation Panel.

(8) Provides technical guidance and direction under the Interagency Agreement with National Oceanic and Atmospheric Administration (NOAA), Air Resources Laboratory (ARL)/Special Operations and Research Division (SORD), to ensure proper meteorological support to the underground nuclear testing program.

(9) Provides coordination on operational issues, emergency response, and ensures that nuclear testing treaty requirements are met.

(10) Maintains the official record copy of all event files.

(11) Administers the Containment Evaluation Panel member consultant agreements.

(12) Administers the Scientific Advisory Panel medical doctor consultant agreements.

(13) Annually tasks the Nuclear Test Organization to review:

(a) The critical activities of the functional areas to determine whether descriptions are current and sufficient to meet the DOE/NV mission.

(b) Job and task analyses to ensure relevancy to the current functional areas.

(c) Their key positions for adequate coverage of the critical functional areas and provide a plan of action to correct shortcomings.

j. Director, Asset Management Division (AMD).

(1) Provides logistical support to the DOE/NV Project Manager for test program preparation.

(2) Provide and operate the Operations Coordination Center in support of nuclear testing.

k. Director, Engineering Division.

(1) Provide an NTS Construction Craft Support representative to the Nuclear Test Organization.

(2) Provides construction support to the DOE/NV Project Manager for test program preparation, execution, and post-test activities.

l. Director, Emergency Management Division (EMD).

(1) For tests being monitored under Treaty rights:

(a) Provides a Verification Representative and a Verification Liaison Officer to the Nuclear Test Organization.

(b) Ensures all DOE/NV Threshold Test Ban Treaty Protocol responsibilities are satisfied.

(c) Provides support to the On-Site Inspection Agency.

(d) Coordinates the working and living facilities and verification equipment for the On-Site Inspection Agency and the designated personnel.

(2) Ensures that the DOE/NV Emergency Operations Center (EOC) is fully operational and staffed to support an underground nuclear weapons test according to plans and procedures.

(3) Provide a Test Emergency Management Officer to the Test Management Information Team.

(4) Provides a DOE/NV Emergency Management/Federal Radiological Monitoring Assessment Center Representative to the Nuclear Test Organization.

(5) Ensures that the NTS Emergency Management Center/Team is operational and available to support the Nuclear Test Organization.

(6) Ensures that the NTS Emergency Management System is prepared for the on-site transportation of nuclear explosives and the conduct of a nuclear weapons test.

m. Program Manager, Nuclear Explosive Safety (NES) Staff.

(1) Provides a Nuclear Explosive Safety Advisor to the Nuclear Test Organization.

(2) Ensures that a proposed nuclear test will be conducted in compliance with DOE O 452.1 and 452.2 and NV Orders 5610.10 and 5610.11A, and that DP-20 approval is obtained prior to beginning any nuclear explosive operation.

(3) Prepares the nuclear explosive safety documentation portion of the Detonation Authority Request package.

(4) Provides field reviews of each nuclear test event to ensure the application of nuclear explosive safety rules and study recommendations.

n. Directors, LANL or LLNL.

(1) Direct the field and technical aspects of experiments and tests.

(2) Provide the nuclear explosives for each nuclear test.

(3) Provide a Test Director for each nuclear test.

(4) Provide a Scientific Advisor to the Nuclear Test Organization to serve as Chairman of the Test Controller's Scientific Advisory Panel.

(5) Provide a member to the Threshold Treaty Review Panel.

(6) Fulfill responsibilities and authorities as delegated by the DOE/NV Manager, and as necessary to accomplish the mission set forth in NTS Standard Operating Procedure (NTS-SOP) 1104.

(7) In the event of an operational emergency, provide trained consequence assessment personnel to the NTS Emergency Management Center's Consequence Assessment Group.

o. Director, EPA/ORIA-RSL, Las Vegas.

(1) Provides an independent radiological surveillance and safety program in the off-site areas.

(2) Provides the Off-Site Radiological Safety Advisor member to the Test Controller's Scientific Advisory Panel.

(3) Provides a Radiological Safety Program Project Officer to the Nuclear Test Organization.

(4) In the event of an operational emergency, provide a liaison to the NTS Emergency Management Center's Consequence Assessment Group.

p. Director, NOAA-ARL/SORD.

(1) Directs meteorological support for the underground nuclear testing program.

(2) Serves as the Meteorological Advisor member of the Test Controller's Scientific Advisory Panel.

(3) Provides an NOAA-ARL/SORD Weather Event Support Meteorologist and Event Radiation Fallout Support Specialist to brief and support the Nuclear Test Organization.

q. Program Coordinator, NTS Weapons Program, USGS. Ensures an independent review of the event site geology and hydrology, and the containment prospectus for each nuclear test.

r. U.S. Air Force/DOE Liaison Office. Provides a Liaison Officer to the Nuclear Test Organization.

s. Test Controller.

(1) Ensures the safe conduct of each test in compliance with the DOE/NV Manager's Delegation of Authority Memorandum, Nuclear Testing Restriction and Guidance Document, DOE and DOE/NV Directives, Orders, Notices, instructions, written policy and guidance, containment plans, and the treaties.

(2) Has operational control, including Environment, Safety, and Health coordination authority, of the NTS during the test execution period and has the authority to proceed with, accelerate, delay, or postpone tests as may be necessary.

(3) Approves the Intruder Interdiction Action Plan.

t. Nuclear Test Organization. Is an organization formed for the purpose of conducting nuclear tests. The composition of the Nuclear Test Organization may be readily adjusted or changed in response to the needs and technical objectives of the DOE nuclear test program.

The Nuclear Test Organization is comprised of the following positions:

(1) Test Controller.

(2) Test Director.

(3) Test Controller's Scientific Advisory Panel.

(a) Chairman, Scientific Advisor.

(b) U.S. EPA Off-Site Radiological Safety Officer.

(c) NOAA-ARL/SORD Meteorological Advisor.

(d) Medical Advisor.

(e) Health Physics Advisor.

(4) NOAA-ARL/SORD Weather Event Support Meteorologist.

(5) NOAA-ARL/SORD Event Radiation Fallout Support Specialist.

(6) U.S. EPA Radiological Safety Program Project Officer.

(7) U.S. Air Force Liaison Officer.

(8) Radiological Operations Officer.

(9) NTS Construction/Craft Support Representative(s).

(10) Security Advisor.

(11) Nuclear Explosive Safety Advisor.

(12) DOE/NV Emergency Management/Federal Radiological Monitoring Assessment Center Representative.

(13) Test Operations Officer.

(14) Test Readiness Project Manager.

(15) Test Liaison Officer.

(16) DOE/NV Project Manager.

(17) Air Operations Officer.

(18) Public Affairs Specialist.

(19) Laboratory Containment Scientists.

(20) Verification Liaison Officer.

(21) Verification Representative.

(22) Occupational Safety Advisor.

(23) Other DOE/NV, contractor, or laboratory support personnel as required.

u. Test Management Information Team.

(1) Supports the DOE/NV Manager during test execution periods.

(2) Is comprised of the following positions:

(a) Test Management Information Team Manager.

(b) PAIO representative.

(c) EMD Test Emergency Management Officer.

(d) Radiological Safety Advisor.

(3) At the declaration of an operational emergency, the EOC augments staff to adequately address the emergency and fulfill DOE/NV's responsibility as Lead Federal Agency.

v. NTS Emergency Management Team.

(1) Provides for the emergency evacuation of the Mercury Base Camp and other uncontrolled areas of the NTS during nuclear test activities, if required.

(2) Is comprised of the following positions:

(a) Contractor Crisis Manager.

(b) Fire Protection Services Advisor.

(c) Contractor Site Services Manager.

(d) Consequence Assessment Group.

(e) Security/Law Enforcement Representative.

(f) Contractor Safety and Health Advisor.

(g) Contractor Health Physics Advisor.

10. REQUIREMENTS. Refer to Chapters I through IV.

11. PROCEDURES. Each organization participating in the preparation, execution, or post-test activities of a nuclear test shall have plans and procedures necessary to ensure compliance with applicable Federal regulations, DOE and NV Orders, Directives, Announcements, and NTS-SOPs.

Terry A. Vaeth
Acting Manager

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CHAPTER I

GENERAL REQUIREMENTS

1. DOE/NV MANAGER. The DOE/NV Manager has the responsibility for implementing DOE Orders. For the Underground Nuclear Testing Program, DOE/HQ has specifically directed the following:

   a. Develop and publish such directives, as necessary, to implement this policy.

   b. Provide for the submission of reports on a fiscal year basis to DP-10 for all operational matters pertaining to underground nuclear tests at the NTS.

   c. Provide written notification to DP-20 that the requirements of DOE O 452.1 and 452.2 and NV Orders 5610.10 and 5610.11A have been completed. This notification must be prior to any nuclear explosive operations commencing on a particular underground nuclear test and may be part of the DOE/NV response to a Nuclear Explosive Safety Survey Group report.

   d. Secure programmatic and detonation authority from DP-10 prior to the detonation of any underground nuclear weapons test.

   e. Receive the required components and nuclear explosives and provide for their positive security, adequate storage, and necessary handling facilities at the NTS. The assembly of special nuclear materials and high explosives into a configuration capable of producing a nuclear detonation has been authorized to be performed only within the Pantex weapons production facility and the NTS. Assembly operations at any geographical location other than those authorized above must have approval of DP-20 prior to commencement.

   f. Ensure that every precaution has been taken to reduce to the lowest level technically and economically practicable all hazards, both to the public and on-site personnel, from any nuclear test detonation, subsequent post-shot operations, or other NTS operations.

   g. Ensure that all operations involving the risk of radiation exposure will be planned and executed in accordance with DOE N 441.1 and 10 Code of Federal Regulations (C.F.R.) Part 835, Occupational Radiological Protection. Conservative area controls shall be instituted, and the use of forward area personnel and facilities restricted to the minimum essential with evacuation plans established for all remaining personnel.

h. Ensure that the containment design, emplacement, and firing of the test device plus post-shot operations shall be conducted so that the probability of the release of radioactivity in sufficient quantity to be a health hazard either on- or off-site is minimized. However, since accidents are always a possibility, the radiation guidelines approved by DOE for planning nuclear test detonations are predicated on the postulation that a release could occur and, therefore, require predictions to be made for the maximum potential exposure from each test using the most appropriate hypothetical release model. Thus, the "as low as reasonably achievable" concept for operations involving potential radiation exposure is governing; but, as a safety precaution, an accident model is postulated as a limiting factor. Therefore, in addition to the radiological criteria given above, the following shall also be adopted:

(1) For tests at the NTS, when considering the event day weather conditions and the specific event characteristics, calculations should be made using the most appropriate hypothetical release models which estimate the off-site exposures that could result from the most probable release scenario. Should such estimates indicate that off-site populations, in areas where remedial actions to reduce whole-body exposures are not feasible, could receive average whole-body dose exposures in excess of 0.170 R/year, the event shall be postponed until more favorable conditions prevail. In addition, events may only proceed where remedial actions against uptake of radionuclides in the food chain are practicable and/or indications are that average thyroid doses to the population will not exceed 0.5 rad/year.

(2) In those areas where trained radiation-safety monitors are available, where communications are effective, where people can be expected to comply with recommended actions, and where remedial actions against uptake of radionuclides in the food chain are practicable, events may proceed when indications where individuals in those areas would not receive whole-body exposure and thyroid doses in excess of 0.5 R/year and 1.5 R/year, respectively.

(3) Should there be any release of radioactive material which may move off-site, aircraft and ground radiation monitoring systems will be employed, along with detailed meteorological data, to predict radioactive cloud trajectories and potential exposure rates at downwind locations. Based upon these predictions and subsequent radiological monitoring observations, every effort will be made to keep total dose commitments from both internal and external emitters to the lowest practicable levels. To this end, remedial actions will be employed which are compatible with the provisions of 40 C.F.R. Part 61, the National Emission Standards for Hazardous Air Pollutants; and the reportable quantities of radionuclide release under 40 C.F.R. Part 30, the Comprehensive Environmental Response, Compensation and Liability Act; a coordinated emergency action plan;

and the basic philosophy of the Environmental Protection Agency Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.

i. Assume responsibility for the proper containment of tests in accordance with the U.S. obligations under the Limited Test Ban Treaty. Nuclear weapons development tests and experiments are to be planned and executed so that the tests will not place measurable amounts of radioactive debris beyond the boundaries of the U.S.

j. Assume responsibility along with associated national laboratories for the implementation of the technical provisions of the Threshold Test Ban Treaty Protocol at the NTS in accordance with U.S. obligations under the Threshold Test Ban Treaty. Coordinate NTS testing operations and verification activities with DOE/HQ, On-Site Inspection Agency, laboratories, contractors, and associated agencies. This coordination includes evaluation and validation of the test operation plans and designs to ensure that all provisions of the Threshold Test Ban Treaty Protocol have been properly applied to each specific test.

k. Continue to maintain procedures for a panel of scientists (such as the Containment Evaluation Panel) to evaluate and advise on the technical adequacy of the containment design of each proposed nuclear test. This panel shall be composed of experts in the science of containment of underground explosions and the related disciplines. The panel shall have representatives from the weapons' laboratories and the Defense Special Weapons Agency as well as outside consultants. Adequate information on site geology, material properties, drilling history, hydrology, geophysics, and stratigraphy will be generated and presented for review by all members and all recommendations and evaluations properly documented. Data, recommendations, and evaluations on tests prepared for execution at the NTS will, after review by the sponsoring laboratory, this panel, and the DOE/NV Manager, be forwarded to DP-10 with a request for detonation authority at least three weeks prior to the date of needed authority.

l. Prior to the execution of each test, designate a Test Controller to ensure that either all test preparations have substantially followed the containment design or that significant deviations have been referred to the Containment Evaluation Panel and judged inconsequential to containment. The designated Test Controller shall be supported in his/her role by a panel of appropriate scientific disciplines to aid him/her in making such judgments. The sponsoring laboratory shall designate an individual responsible for providing pertinent information on activities affecting containment which have been completed since the last meeting of the Containment Evaluation Panel.

m. Ensure that no devices are tested at the NTS which have design yields in excess of 150 kilotons. A Threshold Treaty Review Panel shall be established and maintained to

review and report on the design laboratory's preshot yield calculations for all tests with a design yield of 125 kilotons or greater. The panel's report on such tests shall be forwarded with the request for detonation authority to be in the office of DP-10 at least 45 days before the test readiness date. In order to make it practical to reconsider scheduled tests and to abide by the constraint that no more than two unintentional breaches occur within any 12-month intervals, no other test with a design yield of 125 kilotons or greater will be placed in an irreversible position prior to the sponsoring laboratory's prompt yield measurement determination that the last device tested with a design yield of 125 kilotons or greater did not have a device yield exceeding 150 kilotons. Should there be an apparent device yield greater than 150 kilotons, then no device with a design yield of 125 kilotons or greater will be placed in an irreversible position pending DOE reconsideration. Post-shot Threshold Treaty Review Panel analyses should be provided to DP-10 as soon as possible in order to shorten the period of reconsideration.

n. As defined in DOE Order 5484.1, establish, as required in the event of an unanticipated substantial release of radioactivity or other unusual circumstances, a fact-finding board to conduct the investigations necessary to determine the cause, submit recommendations for prevention of similar occurrences, and prepare situation reports. DP-20 will be kept informed as to the nature of any accidental release of radioactivity.

o. Furnish DP-10 a yearly summary of all types of releases of radioactivity from any operations at the NTS.

p. Maintain, through the PAIO, a Public Information Plan to conform with current DOE/NV public announcement policy as approved by DP-10.

q. Furnish DP-10 with test plans and schedules, developed in coordination with the weapons laboratory directors, as appropriate.

r. Prepare appropriate materials for environmental impact statements or assessments, required by the provisions of DOE procedures for compliance with the National Environmental Policy Act, to cover any proposed nuclear test operations and submit to DP-10 for review and processing.

2. PLANS AND PROCEDURES. Each organization participating in the preparation, execution, or post-test activities of a nuclear test shall have plans and procedures necessary to ensure compliance with applicable DOE and NV Orders, Directives, and NTS-SOPs.

3. NUCLEAR EXPLOSIVE SAFETY. No nuclear explosive operation may commence until approval of a Nuclear Explosive Safety Study/Survey in accordance with DOE O 452.1 and 452.2 and NV Orders 5610.10 and 5610.11A.

4. TREATY VERIFICATION. For tests subject to monitoring under terms of the Threshold Test Ban Treaty:

   a. Preparation for and execution of the test will comply with terms of the DOE/NV "Operations Plan for Conduct of Verification Activities at the Nevada Test Site" Coordinated Schedule as negotiated for that specific event.

   b. The Director, EMD, will provide the On-Site Inspection Agency designated personnel with:

      (1) Required messages and notifications.

      (2) Satellite hole and geophysical data.

      (3) Required logistical support.

      (4) Training on the NTS safety requirements and emergency procedures.

5. ENVIRONMENT, SAFETY, AND HEALTH COORDINATION RESPONSIBILITY. All work locations at the NTS are subject to environmental, safety, and health requirements, including radiological safety responsibility, that are applicable to all organizations participating at that location. Unless otherwise delegated, this responsibility is normally assigned to the NTS contractor. For nuclear test event sites, this responsibility is transferred to the sponsoring laboratory.

CHAPTER II

TESTING REQUIREMENTS

1. SITE SELECTION.

   a. Location for proposed nuclear tests on the NTS will be selected and approved in accordance with DOE/NV Announcement Number 23, Environmental Protection Policy Statement, dated April 2, 1991; the Groundwater Protection Management Program Plan for DOE/NV, dated February 19, 1993; and the current Environmental Impact Statement.

   b. The sponsoring laboratory shall submit a Hydrologic and Geologic Data Summary evaluating proposed emplacement holes according to the following siting criteria:

      (1) Existing emplacement holes shall be used or shared. The inventory criteria shall be consistent with Property Management Regulations.

      (2) Minimize tests with working points at or below the water table. Perched water conditions can be excluded.

      (3) Working point should be placed no closer than two cavity radii from any regional carbonate aquifer.

      (4) Emplacement holes should not be sited within 1500 meters of the NTS boundary when hydrologic models indicate water flow in an off-site direction.

      (5) Emplacement holes which are drilled into a known aquifer should be plugged back to within one cavity radius of the working point.

2. SITE CHARACTERIZATION. Locations selected for proposed nuclear tests will be characterized in accordance with NTS-SOP 5413.

3. CONTAINMENT DESIGN AND EVALUATION. The sponsoring laboratory shall analyze site characterization data, prepare a containment design, and prepare and present a containment prospectus to the Containment Evaluation Panel in accordance with the "Containment Evaluation Panel Charter" and additional guidance as may be issued by the Containment Evaluation Panel.

4. EVENT SITE PREPARATION.

   a. The NTS contractor(s) shall provide engineering design and construction support meeting the criteria of the sponsoring laboratory, as approved by the DOE/NV Project Manager.

   b. Under authority delegated by the DOE/NV Manager, the sponsoring laboratory shall provide technical direction to the contractor, as necessary, to meet their scientific requirements.

   c. For tests subject to treaty monitoring, the Director, EMD, in cooperation with the sponsoring laboratory Test Director, will ensure accomplishment of activities identified in the Coordinated Schedule such as:

      (1) Pretest inspections of verification equipment.

      (2) Required logging, coring, and surveying activities.

      (3) Installation of verifying party equipment and facilities at ground zero and the Control Point.

      (4) Setup and testing of anti-intrusiveness and trigger conditioner devices for verifying party data recording facilities.

5. DIAGNOSTICS, TIMING, AND CONTROL.

   a. The NTS contractor(s) providing technical support for the preparation and installation of diagnostics and timing and control systems shall work to the technical criteria of the sponsoring laboratory.

   b. Under authority delegated by the DOE/NV Manager, the sponsoring laboratory Test Director shall provide technical direction to the contractor, as necessary, to meet the laboratories' scientific requirements.

   c. The Test Director shall ensure that the installation and operation of timing and control systems are in accordance with the approved Nuclear Explosive Safety Studies and NTS-SOP 5610.

6. RECEIPT, ASSEMBLY, DISASSEMBLY, AND STORAGE.

   a. No receipt, assembly, disassembly, modification, or storage of nuclear explosives or special nuclear material may occur on the NTS without authorization of the AMNS in accordance with NTS-SOP 5613.

   b. The sponsoring laboratory shall ensure the storage facility meets all requirements of the approved Nuclear Explosive Safety Studies of Assembly, Storage, and Transportation, and NTS-SOP 5610.

   c. Accountability of the nuclear material will be performed by SSD's nuclear materials representative in conformance with DOE Orders and/or DOE approved material control and accountability plans.

   d. The sponsoring laboratory shall assemble the nuclear explosive in accordance with the approved Nuclear Explosive Safety Studies.

   e. Assembly of nuclear explosives not known to be one-point safe, shall be authorized by the Assistant Manager for National Security upon receipt of approval by DP-20.

7. NUCLEAR EXPLOSIVE DELIVERY AND INSERTION.

   a. Prior to delivery of the nuclear explosive to the event site, the Test Director shall prepare and submit to SSD for approval, a Ground Zero Security Plan which conforms to the requirements of the "Site Safeguards and Security Plan."

   b. Prior to delivery of the nuclear explosive to the event site, the NTS security contractor shall prepare and submit to SSD for approval, a convoy plan which conforms to the requirements of the "Memorandum of Understanding for Convoys of Nuclear Test Devices on the Nevada Test Site" and the "Memorandum of Understanding for Intercompound Moves in Area 27."

   c. The sponsoring laboratory shall ensure that delivery and insertion are in accordance with the approved "Nuclear Explosive Safety Master Study of the Joint LANL/LLNL Assembly, Storage and Transportation Operations at the Nevada Test Site," "Nuclear Explosive Safety Master Study of the LLNL/LANL I&E at the Nevada Test Site," the "As-Built" review, and NTS-SOP 5610.

   d. Prior to delivery of the nuclear explosive to the event site, the laboratory Test Director shall obtain permission from the AMNS to emplace the nuclear explosive in accordance with NTS-SOP 5614.

e. For tests subject to treaty monitoring, EMD will ensure that the On-Site Inspection Agency and designated personnel are permitted to perform measurements of the device canister.

8. EMPLACEMENT AND STEMMING.

a. NTS contractor(s) shall conduct emplacement and stemming operations at the technical direction of the laboratory Test Director.

b. Downhole emplacement of the nuclear explosive shall be in accordance with the approved "Nuclear Explosive Safety Master Study of the LLNL/LANL I&E at the Nevada Test Site," and NTS-SOP 5610.

c. Prior to stemming, the laboratory Test Director shall obtain permission from the AMNS to place the nuclear explosive in an irretrievable position in accordance with NTS-SOP 5614.

d. Approved stemming plan of the emplacement hole shall be in accordance with the approved stemming plan as presented to the Containment Evaluation Panel.

e. For tests subject to treaty monitoring, the Director, EMD, will ensure that the On-Site Inspection Agency and designated personnel are permitted to:

(1) Observe downhole emplacement of the canister and confirm final canister location.

(2) Observe the stemming process and collect samples of stemming material.

9. ON-SITE AND OFF-SITE MONITORING.

a. The NTS contractor shall field a radiological monitoring network to support execution of each nuclear test and during consequence assessment and management in the event of an operational emergency. This network shall consist of:

(1) A temporary Remote Area Monitoring System array at ground zero to conform to the criteria of the sponsoring laboratory.

(2) A permanent on-site system including the Remote Area Monitoring System, air samplers, noble gas samplers, tritium samplers, and thermoluminescent dosimeters.

b. The Director, EPA/ORIA-RSL, shall ensure that their off-site radiological surveillance networks are ready to support test execution.

c. The Director, NOAA-ARL/SORD, shall ensure their personnel and meteorological monitoring systems are ready to support test execution.

d. The Resident Manager, Sandia National Laboratories (SNL), shall ensure that the permanently installed NTS geophone network is ready to support test execution.

e. The NTS contractor shall install a closed-circuit television monitoring system of the ground zero area. Prior to installation, location and coverage shall be approved by the DOE/NV Project Manager, STD; and a representative from SSD. The system shall be operational prior to device delivery. The contractor shall further ensure that the airborne closed-circuit television system is ready to support test execution.

f. The NTS security contractor shall ensure that monitoring systems required by the approved Intruder Interdiction Action Plan are in place and operational.

g. For tests subject to treaty monitoring, the Director, EMD, will ensure that the On-Site Inspection Agency designated seismic stations are provided the required timing and schedule notifications.

10. TEST EXECUTION.

a. Approximately 2 weeks prior to scheduled test execution, the Test Operations Officer shall submit a DOE Test Controller's Operations and Security Plan to the Test Controller for approval.

b. The Test Controller's Operations and Security Plan shall ensure compliance with the current Deputy DP-10's written policy and direction, and the DOE/NV Manager's written directions. This plan shall address the following:

(1) Test Location.

(2) Identification of Key Personnel.

(3) Radiological Safety Delegation.

(4) Planning and Safety Reviews.

(5) Manned and Stay-In Stations.
(6) Aircraft Participation (Aerial Tracking/Sampling).

(7) Closed-Circuit Television.

(8) Geophones.

(9) Area Control Procedures.

(10) Effluent Release Reporting Requirements.

(11) Protection of Facilities and Equipment.

(12) Assignment and Schedule of Activities.

(13) Security Operations.

c. All participating organizations shall ensure that their responsibilities and activities assigned in the Test Controller's Operations and Security Plan are completed as scheduled and reported to the Test Controller.

d. The Test Operations Officer shall coordinate these activities and reports.

e. For tests subject to treaty monitoring, the Director, EMD, will ensure that:

(1) The Test Controller is apprised of conditions and limitations imposed by the treaty.

(2) The required notifications are provided to the On-Site Inspection Agency designated personnel.

(3) The On-Site Inspection Agency designated personnel are included and accounted for in emergency plans and procedures.

11. ARMING AND FIRING.

a. The Test Director shall ensure that nuclear explosive arming and firing is conducted in accordance with approved procedures contained in the "Nuclear Explosive Safety Master Study of LANL Timing & Firing of Nuclear Explosives at the Nevada Test Site," "Nuclear Explosive Safety Study of the LLNL Arming & Firing and Timing & Control System and Operations at the Nevada Test Site," and NTS-SOP 5610.

b. Prearming activities may not proceed until authorized by the Test Controller.
c. The countdown sequence may not proceed until a zero time has been established and permission to fire has been granted by the Test Controller.

d. Unless stopped by the Test Director for technical reasons or the Test Controller for any reason, the programmed countdown sequence normally will continue until zero time.

e. For tests subject to treaty monitoring, the verification representative will ensure that the On-Site Inspection Agency designated personnel are provided appropriate dry run schedules and timing signals.

12. REENTRY.

a. The Test Director shall prepare a reentry plan. This plan shall be presented for approval to the Test Controller and Scientific Advisory Panel at the D-1 planning meeting.

b. When deemed safe and based upon monitored data, predictions of collapse, and recommendations of the Test Director and Scientific Advisory Panel, the Test Controller shall authorize reentry into the event site.

c. The Test Director shall ensure that the reentry is in accordance with the approved reentry plan.

d. When deemed safe and appropriate, the Test Controller shall open the forward areas of the NTS for normal work.

e. For tests subject to treaty monitoring, the Verification Liaison Officer will ensure that the Test Controller is aware of treaty requirements and that the On-Site Inspection Agency designated personnel treaty rights are satisfied during reentry.

13. POST-TEST ACTIVITIES.

a. NTS contractor(s) shall perform post-shot drilling activities to meet the criteria of the sponsoring laboratory.

b. Laboratory and contractor radiological procedures shall be in conformance with DOE/NV Organization/Yucca Mountain Project Radiological Control Manual, Revision 1, dated 9-2-94.

c. For tests subject to treaty monitoring, the Director, EMD, will ensure that:

(1) All required data and other protocol-related information is provided to the On-Site Inspection Agency designated personnel.

(2) Post-test inspections, movement, storage, and shipment of the On-Site Inspection Agency designated personnel equipment are accomplished.

14. EVENT SITE RESTORATION.

a. When use of the event site is no longer required by the sponsoring laboratory, the site shall be restored to meet DOE policy guidelines for environmental remediation.

b. Upon completion of restoration, control of the event site will be returned to DOE.

CHAPTER III

READINESS REVIEW REQUIREMENTS

1. PROGRAMMATIC REVIEW AND APPROVAL. Prior to the testing moratorium, a program of nuclear testing was proposed, reviewed, and approved on an annual basis. The proposed program from the Secretary of Energy was submitted to the National Security Council. Based on review and recommendation by the National Security Council, the President approved each test by name. Based on Presidential approval, DP-10 authorized the approved tests and provided additional guidance and direction to the DOE/NV Manager. The Director, STD, reviewed each test and ensured Presidential programmatic approval. If a resumption of testing is directed in the future, a similar process will again be followed. Based on Presidential approval, DP-10 will provide appropriate authorization, direction, and guidance to the DOE/NV Manager, and the Manager will ensure the development of a plan which satisfies the requirements within this order and guides the preparation and conduct of the approved test(s).

2. VERIFICATION REVIEW. The Director, EMD, shall review each test to ensure compliance with the Threshold Test Ban Treaty notification requirements.

3. NUCLEAR EXPLOSIVE SAFETY STUDIES/SURVEYS.

    a. For each scheduled test, the NES and the sponsoring laboratory conduct a Nuclear Explosive Safety Study/Survey in accordance with DOE O 452.1 and 452.2 and NV Orders 5610.10 and 5610.11A. This study/survey is required to be approved and all issues resolved prior to conducting any nuclear explosive operation.

    b. The Program Manager, NES, will ensure an "As-Built" review is conducted following the assembly of the nuclear explosive. This review will verify the nuclear explosive was assembled in accordance with the approved Nuclear Explosive Safety Study/Survey.

    c. The Program Manager, NES, will ensure field follow-up of nuclear explosive safety reviews to monitor conformance with approved nuclear explosive safety procedures, study/survey recommendations, and safety rules.

4. CONTAINMENT EVALUATION.

    a. A review of the Containment Evaluation Panel prospectus is conducted with the USGS, DOE/NV staff, and sponsoring laboratory prior to the Containment Evaluation Panel

meeting to resolve any geological issues and suggest additional matters that may need to be addressed by the Containment Evaluation Panel.

b. During the Containment Evaluation Panel meeting, observer organizations, including the USGS and the NTS contractor, obtain, analyze, and present information and data relating to construction, rock properties, geology, and hydrology. A panel of independent containment experts, chartered by the DOE/NV Manager, categorize the nuclear event based on presentations by the sponsoring laboratory and by reviewing the Containment Evaluation Panel prospectus.

c. Each member shall conduct an independent evaluation of containment and provide the Chairman with a written categorization statement. These statements and a recommendation by the Chairman shall be forwarded to the DOE/NV Manager.

5. SITE SELECTION REVIEWS. Geologic/Hydrologic data is reviewed by geologists and hydrologists from STD and EPD for compliance with DOE/NV Announcement Number 23 and the Groundwater Protection Management Program Plan for DOE/NV, and then submitted for approval for hole construction to the AMNS.

6. CONSTRUCTION REVIEWS.

a. All event site designs and construction drawings are reviewed and approved by the DOE/NV Project Manager.

b. The NTS contractor provides independent inspection services of all event site construction.

c. The DOE/NV Project Manager conducts field reviews of construction in progress to ensure compliance with all construction standards, approved plans and specifications, and other requirements.

7. THRESHOLD TREATY REVIEW.

a. For nuclear tests with design yields greater than 125 kilotons, the sponsoring laboratory will present the design of the nuclear explosive to the Threshold Treaty Review Panel for analysis.

b. The Threshold Treaty Review Panel shall determine if the design yield is within the limits of the Threshold Test Ban Treaty and makes recommendations to the DOE/NV Manager.

8. GROUND MOTION AND ATMOSPHERIC OVERPRESSURE REVIEW.

   a. The NTS contractor shall make calculations of expected ground motion and prediction of damage to the NTS infrastructure. This data is submitted to the STD and the AMD for review. Based on these reviews, the Director, STD, shall recommend, and the Director, AMD, shall direct actions to mitigate expected damage.

   b. The STD shall independently calculate off-site ground motion. Based on predicted off-site ground motion, the Director, STD, shall recommend to the DOE/NV Manager an announcement policy for the proposed test.

   c. The STD shall independently calculate atmospheric overpressure due to the nuclear test. Based on predicted overpressures, the Director, STD, shall recommend aviation safety measures to the Test Controller.

9. ENVIRONMENTAL REVIEW.

   a. The DOE/NV Project Manager shall review laboratory criteria for conformance with the environmental regulations and requirements.

   b. The Director, EPD, shall review the environmental documents of each nuclear test to ensure that the proposed test is consistent with provisions of the current Environmental Impact Statement.

10. SECURITY REVIEWS.

   a. Prior to arrival at the NTS of nuclear explosives or components, the SSD reviews the NTS security contractor station orders for compliance with the "DOE/NV Site Safeguards and Security Plan" and the "Memorandum of Agreement for Shipments of Nuclear Explosives to the NTS."

   b. Prior to transportation of a nuclear explosive to the event site, the SSD:

      (1) Reviews and approves the laboratory Ground Zero Security Plan.

      (2) Performs a security inspection of the event site to ensure compliance with the approved plan.

      (3) Reviews the NTS security contractor convoy plan and stations orders to ensure compliance with the "Memorandum of Understanding for Convoys of Nuclear Test

Devices on the Nevada Test Site" and the "Memorandum of Understanding for Intercompound Moves in Area 27."

(4) Ensures that the recommendations and provisions of the DOE/NV "Nuclear Explosive Safety Study of Security Operations at the Nevada Test Site" have been met.

11. REVIEW FOR AUTHORITY TO RECEIVE, ASSEMBLE, DISASSEMBLE, OR STORE NUCLEAR EXPLOSIVES. Prior to the arrival of nuclear explosives or special nuclear materials at the NTS and upon request from the sponsoring laboratory, the DOE/NV Project Manager shall:

a. Verify with the Program Manager, NES, that applicable nuclear explosive safety requirements have been met.

b. Verify with the Director, SSD, that applicable safeguards and security requirements have been met.

c. Prepare for the approval of the AMNS, an authority letter in accordance with NTS-SOP 5613.

12. DETONATION AUTHORITY REVIEW.

a. For each nuclear test, the DOE/NV Manager shall request detonation authority from DP-10. The Detonation Authority Request package shall include the following:

(1) The Containment Evaluation Panel Chairman's recommendation.

(2) The Containment Evaluation Panel's Executive Secretary's containment summary.

(3) The categorization statement of each Containment Evaluation Panel member.

(4) The containment design prospectus.

(5) Certification of completion of nuclear explosive safety requirements.

(6) Summary of the Director, EPD, environmental review.

(7) Summary of the hydrology reviews.

(8) Recommended public announcement policy.

b. Upon receipt of the Detonation Authority Request package, DP-10 conducts an independent review of the proposed test prior to granting detonation authority.

13. REVIEW FOR AUTHORITY TO MOVE, EMPLACE, AND STEM NUCLEAR EXPLOSIVES. Prior to the delivery of nuclear explosives to the event site and upon request from the Test Director, the Director, STD, shall:

a. Verify that DP-10 has granted detonation authority. If not, the Director, STD, should so advise the AMNS and request guidance before proceeding.

b. Verify the Test Director has been approved by the Manager and delegated authority to conduct the requested operation.

c. Verify with the Director, SSD, that all safeguards and security requirements have been met.

d. Prepare a letter authorizing the sponsoring laboratory to move, emplace, and stem the nuclear explosive in accordance with NTS-SOP 5614 for approval by the AMNS and advise the Test Controller.

14. D-7 PLANNING AND SAFETY REVIEW. Approximately 1 week prior to scheduled test execution, the Test Controller and Scientific Advisory Panel shall conduct a review of operational plans and safety precautions to include:

a. Technical summary of the test.

b. Proposed reentry procedures, including:

(1) Emergency management system status.

(2) Timing requirements.

(3) Geophone monitoring.

(4) Radio net requirements.

(5) Shrink points and hold locations.

(6) Radiological surveys.

(7) Electrical safety checks.

(8) Alarm procedures.

c. Seismic precautions, including:

(1) On-site personnel exclusion area.

(2) Off-site ground motion prediction and recommended actions.

d. Off-site conditions.

e. Meteorological considerations and extended range weather forecast.

f. Applicable Memorandum of Understanding or other agreements.

g. Treaty monitoring requirements.

h. Remote Area Monitoring System status and recommendation.

i. Other safety interests.

j. Security interests.

k. Public affairs interests.

l. Proposed Test Control Center displays.

m. Post-test procedures and duty personnel.

15. DRY RUNS.

a. Prior to the Test Director declaring technical readiness for the nuclear explosive to be delivered to the event site, the sponsoring laboratory shall conduct a successful dry run. This dry run shall include all applicable test organizations.

b. Prior to the Test Director requesting authority to prearm the nuclear explosive, the sponsoring laboratory shall conduct a successful final dry run.

16. ARMING AND FIRING CABLE CONFIRMATION. Prior to the D-1 Readiness Briefing, the sponsoring laboratory shall conduct a physical inspection of the arming and firing cables to ensure readiness.

17. D-1 PLANNING AND SAFETY REVIEW. On the morning before planned detonation, the Test Controller and Scientific Advisory Panel shall conduct a review of operational plans and safety precautions:

    a. Test overview, including:

        (1) Technical status.

        (2) Location.

        (3) Ground zero and trailer park layout.

        (4) Ground zero Remote Area Monitoring System array.

        (5) Reentry Plan.

        (6) Post-shot Drilling Procedures.

    b. Area Control Plan, including:

        (1) Closed areas.

        (2) Controlled areas.

        (3) Personnel numbers and locations.

        (4) Manned and stay-in stations.

        (5) Late exits.

        (6) Intruder Interdiction.

    c. Security interests.

    d. Verification interests.

    e. Emergency management interests.

    f. Add-on projects as required.

    g. Post-test manning assignments.

18. D-1 "AS-BUILT" CONTAINMENT REVIEW.

    a. Prior to the D-1 Readiness Review, the Test Controller and Scientific Advisory Panel shall review the "As-Built" Containment Plan to ensure conformance to the approved plan as presented to the Containment Evaluation Panel. This shall consist of reviews and formal statements by independent containment scientists from both the LANL and the LLNL, and the NTS contractor which emplaced the stemming.

    b. If the Test Controller does not concur that the stemming has been emplaced in substantial conformance with the approved plan as presented to the Containment Evaluation Panel, the test shall be delayed and the matter referred back to the Containment Evaluation Panel.

    c. A verbatim record of this review, the Scientific Advisory Panel deliberation and recommendation, and the Test Controller decision shall be made.

19. D-1 TECHNICAL REVIEW. Prior to the D-1 Readiness Review, the Test Controller and Scientific Advisory Panel shall receive a classified briefing of the significant technical aspects of the experiment from the Test Director. Based on this review and recommendation of the Scientific Advisory Panel, the Test Controller may authorize the test to proceed.

20. D-1 RANGE SAFETY REVIEW. Prior to the D-1 Readiness Review, the Test Controller and Scientific Advisory Panel shall receive a classified briefing of operations on the U.S. Air Force ranges adjacent to the NTS from the U.S. Air Force/DOE Liaison Officer. This briefing shall include an assurance that the U.S. Air Force is capable of evacuating or sheltering range personnel if required. Based on this review, the Test Controller may authorize the test to proceed.

21. D-1 READINESS REVIEW. On the day prior to the detonation, the Test Controller and Scientific Advisory Panel shall conduct a review of readiness for test execution. A verbatim record of this review, the Scientific Advisory Panel deliberation and recommendation, and the Test Controller decision shall be made. This readiness review shall address:

    a. Confirmation of technical readiness by the Test Director.

    b. NOAA-ARL/SORD predicted nuclear event meteorological conditions related to the transport, dispersion and deposition of radioactive material.

    c. NOAA-ARL/SORD prediction of potential radioactive fallout pattern, debris cloud arrival times, hot-line trajectory, and the radiological exposure levels in the unlikely occurrence of a venting.

d. EPA/ORIA-RSL Las Vegas off-site radiological safety preparations.

e. DOE on-site radiological safety preparations.

f. NTS logistical support readiness.

g. Status of completed actions required by the Test Controller's Operations and Security Plan.

h. Status of preparation for future actions required by the Test Controller's Operations and Security Plan.

i. Area Control Plans, including:

(1) Manned stations.

(2) Stay-in stations.

(3) Late exits.

j. Test support aircraft readiness.

22. D-DAY READINESS REVIEW.

a. On the day of planned detonation, the Test Controller and Scientific Advisory Panel shall conduct another review of readiness for test execution. A verbatim record of this review, the Scientific Advisory Panel deliberation and recommendation, and the Test Controller decision shall be made.

b. This review shall include all areas addressed in the D-1 Readiness Reviews with the addition of updated weather and fallout predictions and the Test Director's declaration of a successful final dry run.

c. Based on the recommendations of the Test Director and the Scientific Advisory Panel, the Test Controller may authorize prearming of the nuclear explosive.

d. Upon completion of prearming, the Test Controller shall ensure continued readiness in all respects prior to authorization to commence the countdown sequence.

CHAPTER IV

TRAINING AND QUALIFICATION REQUIREMENTS

1. The AMNS shall identify key positions for the safe preparation and conduct of underground nuclear testing.

2. Each organization participating in the preparation, conduct, or post-test activities of an underground nuclear test shall ensure personnel assigned to identified key positions have a documented training and qualification program.

3. Training and qualification programs for personnel assigned to identified key positions shall identify:

    a. Any minimum prerequisites of education, knowledge, and experience necessary to enter into the position.

    b. Any required formal training courses or other education necessary for qualification.

    c. Any required activities to be performed or observed necessary for qualification.

    d. Any required readings or informal briefings necessary for qualification.

    e. Any required demonstration of knowledge, skill, or ability necessary for qualification.

    f. The means by which the accomplishments of paragraphs a through e above are documented. Other than required reading, these must be verified by an individual other than the person being qualified.

    g. For paragraphs b through e above, any periodic or requalification requirements.

    h. The official authorized to certify individuals to perform their functions.

    i. The means by which the individual will be certified to perform the functions upon their completion of all requirements. Such means may include written examinations, oral boards, recommendation of supervisor or manager, records review, or interview.

4. Each participating organization shall provide to the Director, STD, who shall maintain in the event file:

    a. Identification of individuals assigned to key positions.

    b. Copies of each individual's certification as qualified to perform their assigned functions.

5. The Director, STD, shall enter into the master file, for each nuclear test, the identity of the individuals who performed in each key position as well as copies of their individual certifications.

CHAPTER V

REPORTS

Reports listed below shall be prepared for each test, as required, or for each fiscal year test series upon its termination.

1. NATIONAL RESPONSE CENTER REPORT. Within 8 minutes of detonation, the Test Controller shall notify the National Response Center of detonation by telephone, as required by the Comprehensive Environmental Response, Compensation, and Liability Act.

2. OPERATIONAL REPORTS. A D-48 hour advisory and a post-test report, along with other documentation, as required, will be submitted by the NTS Operations Team at Control Point 1.

3. PUBLIC INFORMATION REPORTS. Director, PAIO, will prepare and publish DOE/NV-209, "Announced United States Nuclear Tests."

4. RADIOACTIVE RELEASE REPORTS. The Assistant Manager for Technical Services will furnish and update a report on a quarterly basis and provide a yearly summary of all types of releases of radioactivity to DP-10.

5. TREATY VERIFICATION AFTER-ACTION REPORT. In accordance with the operations plan, "Conduct of Verification Activities at the NTS," an After-Action Report for each verification event will be developed at the conclusion of the event. Problem areas and lessons learned will be included in the report.

6. VERIFICATION REPORTS. Nuclear testing treaty protocols require certain notifications and reports to be provided by the Verifying and Testing Parties. A record of these notifications will be maintained by the EMD.

CHAPTER VI

TEST READINESS

1. PURPOSE. Provide policy and direction for conduct of the DOE/NV Test Readiness Program and identify activities designed to maintain or reconstitute the personnel, equipment, infrastructure, procedures, and authorization basis necessary to conduct a short series of underground nuclear test(s) (one-to-three) to address a safety or reliability issue in the existing stockpile within 24 to 36 months of a Presidential authorization.

2. BACKGROUND ON THE REQUIREMENT FOR UNDERGROUND NUCLEAR TEST READINESS.

   a. The last U.S. sponsored underground test, which was conducted September 23, 1992, preceded a legislatively directed moratorium. On January 30, 1995, the President's National Security Advisor announced that the President had decided to extend the moratorium until a Comprehensive Test Ban Treaty enters into force, on the assumption that it will be signed before September 30, 1996. A Presidential Directive requires DOE to maintain the capability to conduct a nuclear test within 24 to 36 months of a request for resumption from the President.

   b. The DOE approach achieves the maintenance of nuclear test readiness by conducting a science-based experimental program which provides data necessary for maintenance of the stockpile and contributes to readiness. In specific areas where capabilities are not sufficiently exercised by defense experimentation, a mixture of experimentation and limited exercises will be required to fully meet the readiness mandate.

3. ANNUAL EXERCISE/ACTIVITY.

   a. On an annual basis, and with the cooperation of the national laboratory managers and technical staff, a plan for conduct of dynamic experiments (including sub-critical experiments involving special nuclear material) and hydrodynamic tests at the NTS will be developed. These high explosives experiments may or may not include special nuclear materials. The Exercise/Activity Plan will also identify test readiness exercises and other experiments which contribute to test readiness. Exercises conducted as an integral part of the schedule experiments will be included in this plan.

   b. The Annual Exercise/Activity Plan will include the following where applicable:

      (1) Technical objectives of the experiments.

(2) Relationship to Defense Programs missions.

(3) Scheduled dates.

(4) Projections to maintain safety related capabilities associated with underground nuclear testing.

c. In the absence of approved experiments which adequately exercises all facets of underground nuclear testing, at least twice per year, a full-scale exercise will be carried out by the Nuclear Test Organization. Ideally, test-readiness training for all facets of nuclear testing will be provided through these exercises, and, when feasible, the exercise will be conducted as an integrated part of dynamic experiments.

d. In the absence of approved experiments which adequately exercise all facets of underground nuclear testing, at least on a quarterly basis, exercises of a more local and limited scope will be conducted for all the major functional areas. Dynamic experiments/integrated exercises will normally satisfy this requirement. In some cases, operations associated with other NTS programs can also provide the required readiness training.

4. FUNCTIONAL AREAS. Chapter II of this Order identifies 14 testing requirements for preparation and conduct of nuclear tests. These ten areas of activity, referred to as Functional Areas, were selected/formed to describe groups of similar operational activities conducted by the Nuclear Test Organization which need to be reviewed and exercised to maintain a test-readiness capability. Documentation of readiness activities and status is accomplished using the following Functional Areas:

a. Containment.

b. Security.

c. Assembly.

d. Storage and Transportation.

e. Insertion and Emplacement.

f. Timing and Control.

g. Arming and Firing.

h. Diagnostics.

i. Test Control Center Activities (D-1 and D-Day).

j. Post-shot Drilling.

5. POSITIONS FOR THE SAFE EXECUTION OF NUCLEAR TEST ACTIVITIES.

a. The Critical Positions within the Nuclear Test Organization which are required for the safe preparation and conduct of nuclear testing have been identified. Critical Position personnel are trained, qualified, and documented by the organizations which make up the Nuclear Test Organization (NTO).

b. The Critical Positions include a subset of positions which are identified by DOE/NV and DOE/HQ as "Key Positions" for conducting the test program. Individuals assigned to Key Positions are qualified and certified by the NTO as indicated in Chapter IV of this Order. DOE/NV maintains a Job Task Analysis for each Key Position. The Key Positions are identified as follows:

KEY POSITIONS

DOE HEADQUARTERS

1. DOE/HQ Deputy Assistant Secretary for Military Application and Stockpile Management (DP-20)

2. DOE/HQ Deputy Assistant Secretary for Research and Development (DP-10)

DOE/NV

1. Air Operations Officer
2. Containment Evaluation Panel
3. Health Physics Advisor
4. Nuclear Explosive Safety Engineer
5. Radiological Operations Officer
6. Security Advisor
7. Test Controller
8. Test Operations Officer

KEY POSITIONS
(Continued)

OTHER FEDERAL AGENCIES

1. U.S. Air Force Liaison Officer
2. Weather Event Support Meteorologist (ARL/SORD)
3. Event Radiation Fallout Support Specialist (ARL/SORD)
4. Containment Evaluation Panel
5. Radiological Safety Program Project Officer (EPA)
6. Off-Site Radiological Safety Advisor (EPA)
7. Meteorological Advisor (ARL/SORD)
8. Containment Scientist (Defense Special Weapons Agency)

NTS CONTRACTOR

1. Control Room Technician
2. Red Shack Technician
3. Downhole Crane Operator
4. Medical Advisor
5. Construction Superintendent

NTS SECURITY CONTRACTOR

1. Convoy Commander
2. Event Lieutenant

NATIONAL LABORATORIES--LANL/LLNL/SNL

1.	Arming and Firing Technician	SNL
2.	Assembly Technician	LANL/LLNL
3.	Construction Engineer	LANL/LLNL
4.	Containment Advisor	LANL/LLNL/SNL
5.	Containment Scientist	LANL/LLNL
6.	Device Engineer	LANL/LLNL
7.	Drilling Engineer	LANL/LLNL
8.	Health Physicist	LANL/LLNL/SNL
9.	Nuclear Explosive Assembly Facility Coordinator	LANL/LLNL
10.	Scientific Advisor (chairman)	LANL/LLNL
11.	Test Director	LANL/LLNL

KEY POSITIONS
(Continued)

12. Timing & Firing Engineer	LANL
13. Nuclear Explosive Safety Engineer	LANL/LLNL/SNL

c. Dynamic experiments and/or readiness exercises will provide training for critical position personnel to the maximum feasible extent, and the participation (by functional area), training, and status of key position personnel will be documented by DOE/NV.

6. EXERCISE/READINESS ACTIVITY PLANNING.

a. At least 1 month prior to the date of exercise/activity, an exercise plan will be published. When the exercise is conducted as an integral part of an experiment an experiment/ exercise plan will be developed. The principal planning objectives will be to ensure:

(1) Each exercise is planned, conducted, and evaluated in a manner which maintains test readiness capability of operations personnel facilities hardware, software, management systems, and controls.

(2) Documentation is maintained to validate exercise objectives.

(3) Opportunities for improvement and lessons learned are identified, tracked, and implemented.

b. Exercise/activity plans will contain the following:

(1) Purpose.

(2) Scope.

(3) Objective(s).

(4) Responsibilities.

(5) Description.

(6) Assignment of safety coordination responsibility.

(7) Permits and authorizations required (if any).

(8) Personnel participation, training, and assessment.

(a) Key position individuals to maintain qualifications.

(b) Individuals in process of qualification for a key position.

(9) Associated facilities, hardware, and software systems to be exercised.

(10) Functional areas exercised.

(11) Procedures and checklists.

(a) Test Director's checklist.

(b) Other checklists.

7. EXERCISE/ACTIVITY COMPLETION REPORTS. Within 2 months following each exercise/activity, which will be documented for readiness, a completion report will be published. The exercise/activity completion report will include the following:

a. Summary of exercise(s)/activities.

b. Summary of exercise/activity results.

c. Evaluation of exercise/activity objectives.

d. Personnel participation and training.

(1) Completed key position training/requalification.

(2) Individuals in process of qualifications.

(3) Other critical position personnel participation and training.

e. Deviations/waivers from exercise/activity plan, policies, other approved plans, or procedures.

f. Unexpected events/unusual occurrences.

g. Problem areas/issues of concern discovered which were resolved on the spot.

h. Opportunities for improvement which should be reviewed for cause and possible corrective action.

i. Lessons learned.

8. ANNUAL TEST READINESS COMPLETION REPORT. At the end of the calendar year, a completion report will be published which identifies and summarizes significant readiness activities for the fiscal year that includes the following:

a. Programs, operations, experiments, and exercises which contributed to test readiness.

b. Functional areas which were active/exercised and a qualitative assessment of capabilities within these areas.

c. Key positions which were active/exercised and a qualitative assessment of the status, technical competency, and adequacy of the personnel qualified/certified to perform in these positions.

d. Job task analyses for key positions and determination of currency and sufficiency.

e. Lessons learned during technical activities and exercises.

f. Functional areas, key positions, and other readiness considerations which require improvement and will be addressed in the next Annual Exercise/Activity Plan.

CHAPTER VII

REFERENCES

1. DOE AND NV ORDERS.

   a. DOE Notice 441.1, RADIOLOGICAL PROTECTION FOR DOE ACTIVITIES, of 9-30-95.

   b. DOE O 452.1, NUCLEAR EXPLOSIVE AND WEAPONS SURETY PROGRAM, of 4-29-96.

   c. DOE O 452.2, SAFETY OF NUCLEAR EXPLOSIVE OPERATIONS, of 4-26-96.

   d. NV Order 5610.10, NUCLEAR EXPLOSIVE AND WEAPON SAFETY PROGRAM, of 3-8-94.

   e. NV Order 5610.11A, NUCLEAR EXPLOSIVE SAFETY, of 11-12-93, and Change 1, of 1-31-94, and Change 2, of 1-30-95.

2. NTS STANDARD OPERATING PROCEDURES.

   a. NTS-SOP 1102, THE NUCLEAR TEST ORGANIZATION, of 7-5-94.

   b. NTS-SOP 1104, MISSION STATEMENTS--DEFENSE NUCLEAR AGENCY AND NATIONAL LABORATORIES, of 3-16-94.

   c. NTS-SOP 1106, TEST MANAGEMENT INFORMATION CENTER, of 7-24-95.

   d. NTS-SOP 5413, CHARACTERIZATION OF EVENT SITES, of 9-3-93.

   e. NTS-SOP 5610, NEVADA TEST SITE NUCLEAR EXPLOSIVE AND WEAPON SAFETY PROGRAM, of 11-16-95.

   f. NTS-SOP 5613, NEVADA TEST SITE PROCEDURE FOR AUTHORIZATION OF RECEIPT, ASSEMBLY, DISASSEMBLY, MODIFICATION, AND STORAGE OF NUCLEAR EXPLOSIVES, of 12-22-93.

   g. NTS-SOP 5614, MOVEMENT, EMPLACEMENT, AND STEMMING OF NUCLEAR EXPLOSIVES, of 7-17-95.

3. OTHER.

   a. Atomic Energy Act of 1954, as amended.

   b. Title 10 C.F.R. Part 835, Occupational Radiological Protection, of 12-14-93.

   c. Title 10 C.F.R. Part 1021, National Environmental Policy Act Implementing Procedures, of 4-24-92.

   d. Title 36 C.F.R. Part 800, Protection of Historic and Cultural Properties, of 10-1-86.

   e. Title 40 C.F.R. Part 61, National Emission Standards for Hazardous Air Pollutants, of 11-15-90.

   f. Comprehensive Environmental Response, Compensation and Liability Act, Public Law No. 96-510, of 12-11-80.

   g. Title 50 C.F.R. Part 402, Interagency Cooperation--Endangered Species Act, of 1973, as amended.

   h. Containment Evaluation Panel Charter, of 7-1-92.

   i. Site Safeguards and Security Plan, of 6-6-96.

   j. DOE/NV-209 (Revision 14), Announced United States Nuclear Tests, of 12-94.

   k. DOE Reorganization Act, Public Law 95-91, of 8-4-77.

   l. Energy Reorganization Act of 1974.

   m. Environmental Protection Agency Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, of 5-92.

   n. Limited Test Ban Treaty, of 8-63.

   o. DOE/NV Announcement 23, Environmental Protection Policy Statement, of 4-2-91.

   p. Groundwater Protection Management Program Plan for DOE/NV, of 2-19-93.

   q. Memorandum of Agreement for Shipments of Nuclear Explosives to the Nevada Test Site, of 12-14-89.

r. Memorandum of Understanding for Convoys of Nuclear Test Devices on the Nevada Test Site and Memorandum of Understanding for Inter-compound Moves in Area 27, of 12-19-92.

s. Nuclear Explosive Safety Master Study of the Los Alamos National Laboratory/Lawrence Livermore National Laboratory Installation and Emplacement at the Nevada Test Site, of 7-26-94.

t. Nuclear Explosive Safety Study of the Lawrence Livermore National Laboratory Arming and Firing and Timing and Control System and Operations at the Nevada Test Site, of 11-23-92.

u. Nuclear Explosive Safety Study of the Joint Los Alamos National Laboratory/Lawrence Livermore National Laboratory Assembly, Storage, and Transportation, of 5-6-94.

v. Operations Plan for Conduct of Verification Activities at the Nevada Test Site, of 9-92.

w. Peaceful Nuclear Explosions Treaty, of 5-76 and its Protocol, of 6-90.

x. Threshold Test Ban Treaty, of 7-74, and its Protocol, of 6-90.

y. Federal Radiological Emergency Response Plan, of 5-1-96.

CHAPTER VIII

DEFINITIONS

1. ANTI-INTRUSIVENESS AND TRIGGER CONDITIONER DEVICES. Electronic devices installed in Russian hydrodynamic yield sensor cables at the NTS which prevent the measurement and recording of sensitive device-related information found in the initial electromagnetic pulse signals emanating from a nuclear explosion.

2. ARCHIVING. The act of preserving information or objects of enduring value, regardless of media, in an appropriate format and media which allows for long-term storage, assess and retrieval of information or items in a secure environment which protects the integrity of the archived material.

3. AS-BUILT. A drawing or other record of a completed assembly or construction which indicates final condition as actually built including all differences from the approved design.

4. CAVITY. An underground void created in the rock by the shock wave and heat from an underground nuclear detonation.

5. CERTIFICATION. The act of determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with specified requirements.

6. CONSEQUENCE ASSESSMENT GROUP. The on- and off-site consequences of a radiological operational emergency must be assessed by technical laboratory and contractor personnel who provide timely assessments and protective action recommendations throughout an emergency by monitoring specific indicators and evaluating field measurements.

7. CRITICAL POSITION. One of a comprehensive set of positions which are necessary for the safe preparation and conduct of an underground nuclear test. Critical Position functions execute detailed tasks and activities within those functional areas that must be performed to complete the scope of a test scenario within a proposed resumption plan. Without appropriate staffing for these Critical Positions, accomplishment of a test would be delayed while alternatives were developed and implemented. Critical Positions are listed in the personnel matrix of the June 1995 NTS Underground Testing Archiving Plan.

8. DESIGNATED PERSONNEL. The official designation for Russian personnel present in the U.S. for the specific purpose of monitoring U.S. nuclear tests under terms of the Threshold Test Ban Treaty.

9. EMERGENCY PLANNING ZONE. The geographic area for which special planning and preparedness actions need to be taken to reduce or minimize the impact to both on-site personnel and the public in the event of an operational emergency.

10. ENERGY SENIOR OFFICIAL. The DOE/NV official in charge of the emergency response to a radiological emergency.

11. ENVIRONMENT, SAFETY, AND HEALTH/RADIOLOGICAL SAFETY COORDINATION RESPONSIBILITY. Operational activities at the NTS are diverse involving the application of many different skills and occupational specialties and are often widely dispersed over a large geographical area. Several different organizations frequently perform work either as a closely integrated team or concurrently at any one location. In order to ensure that the appropriate procedures and policies are uniformly considered and applied by all of the program participants, one organization is assigned overall environment, safety, and health and radiological safety coordination responsibilities for that specific area or facility.

12. FUNCTIONAL AREA. A grouping of related activities and tasks essential to the accomplishment of an underground nuclear test. Each functional area represents a specific category or group of activities, functions or tasks that must be performed.

13. KEY POSITION. A subset of Critical Positions which are essential for the safe conduct of an underground nuclear test. Key Positions have been analyzed through a defined job and task analysis, and have documented training and qualification programs for personnel assigned to these positions.

14. LEAD FEDERAL AGENCY. As defined in the Federal Radiological Emergency Response Plan of 5/1/96, this agency is responsible for leading and coordinating all aspects of the Federal response and for assisting the off-site authorities with their responsibilities for public health and safety during a radiological emergency. This agency will direct radiological monitoring and assessment activities on-site and may assist with off-site monitoring and assessment for a significant accident by establishing a Federal Radiological Monitoring and Assessment Center.

15. NUCLEAR EXPLOSIVE. Any assembly containing fissionable or fissionable and fusionable materials and main charge high explosive parts or propellants that may be capable of producing a nuclear detonation.

16. NUCLEAR EXPLOSIVE OPERATIONS. Those activities which require access to a nuclear explosive such as transportation, storage, assembly, disassembly, modification, and repair.

17. ON-SITE INSPECTION AGENCY. The U.S. Department of Defense organization assigned responsibility for implementing U.S. Arms Control Treaties. They have overall responsibility to oversee and coordinate Russian treaty monitoring activities at the NTS under terms of the Threshold Test Ban Treaty.

18. QUALIFICATION. The characteristics or abilities gained through education, training, or experience, as measured against established requirements, such as standards or tests, that qualify an individual to perform a required function.

19. TEST EXECUTION PERIOD. The period of time following the completion of the initial D-1 readiness briefing through the time when reentry into the event site is complete and the Test Controller announces that all work forces may return to normal work areas.

20. TEST READINESS. The capability to conduct a short series of underground nuclear tests (one-to-three)to address a safety or reliability issue identified in the existing stockpile.

21. THRESHOLD TEST BAN TREATY AND ITS PROTOCOL, OF 6-1-90. Limits the yield of U.S. underground nuclear tests to 150 kilotons and provides for on-site monitoring of certain U.S. tests by Russian designated personnel.

22. VENTING. A dynamic release to the atmosphere of radioactive gases and particulates within minutes after the detonation which does not continue for hours. It therefore involves the release of predominately short-lived nuclides producing a relatively high initial specific activity.

23. WORKING POINT. The location in the emplacement hole centered in the nuclear device.